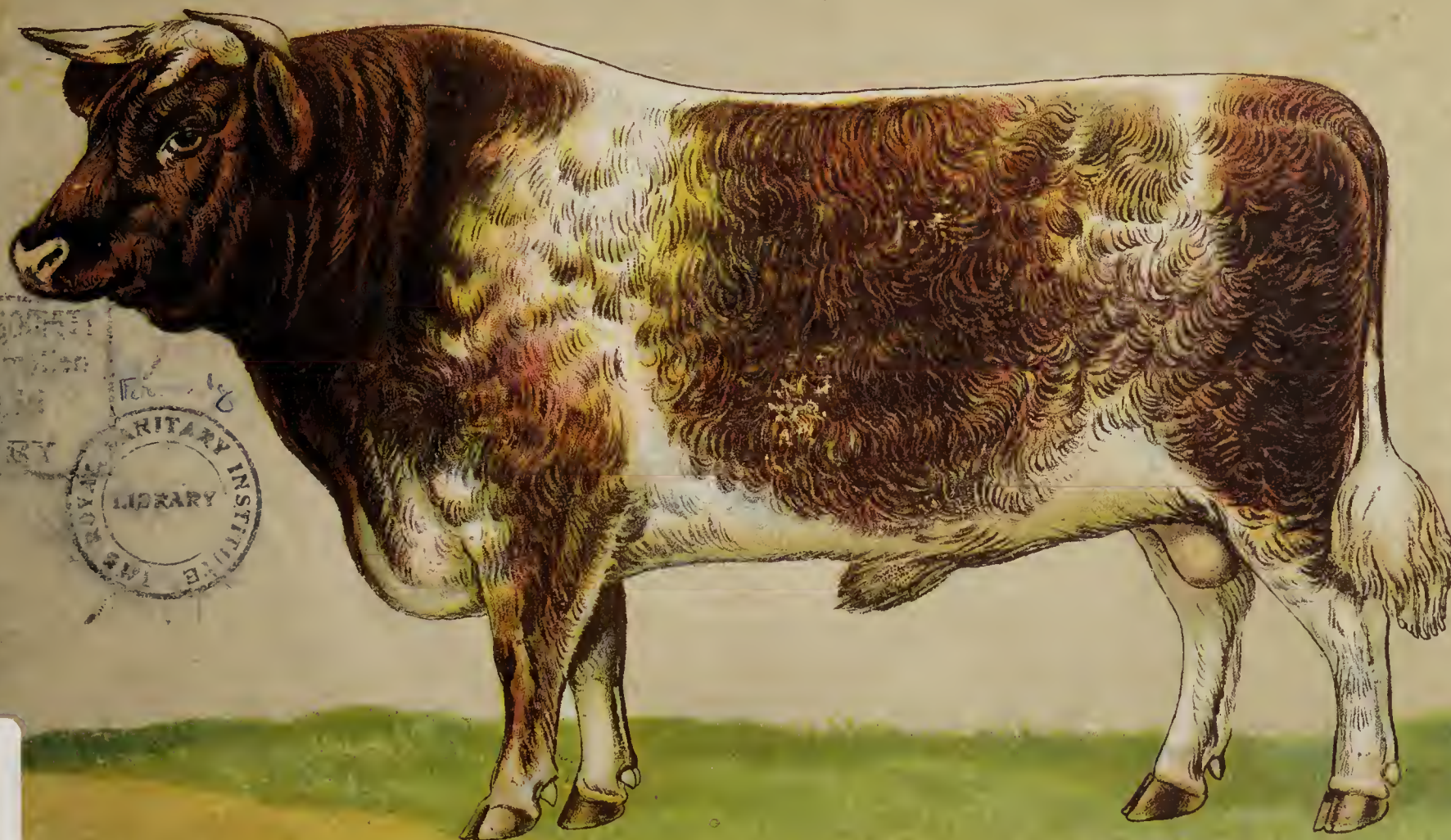


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# ANATOMICAL MODEL OF THE BULL.

COMPRISING FIVE PLATES, WITH KEY, SHOWING OUTWARD CONFORMATION, SKELETON, ARTERIES & VEINS, MUSCLES, & MODELS OF THE INTERNAL ORGANS IN POSITION.



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- „ V. INTERNAL ORGANS.

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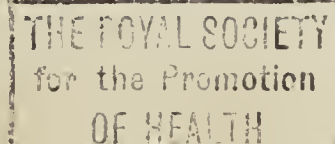
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# KEY TO THE MODEL OF THE BULL.

## PLATE I.—DIVISIONS OF THE BODY OF THE BULL.

### HEAD.

1. Nose.
2. Nostrils.
3. Lower lip, chin.
4. Bridge of nose.
5. Forehead.
6. Frontal crest.
7. Horns.
8. Throat.
9. Eye.
10. Ears.
11. Jaws.

### NECK.

12. Nape.
13. Crest.
14. Œsophagus.
15. Dewlap.

### TRUNK.

16. Withers.
17. Back.
18. Wall of chest.
19. Front breast.
20. Lower Breast.
21. Belly.
22. Loins.
23. Flanks.
24. Upper part of flank.

25. Rump.
26. Croup.
27. Root of tail.
28. Tail.
29. Tuft.
30. Scrotum.
31. Prepuce.

### FORE LIMBS.

32. Shoulder.
33. Point of shoulder.
34. Fore-arm.
35. Elbow.
36. Knee.
37. Shin (metacarpal).
38. Fetlock joint.
39. Dew-claws.
40. Pastern.
41. Coronet.
42. Hoofs.

### HIND LIMBS.

43. Upper thigh.
44. Hip-joint.
45. Stifle-joint.
46. Lower thigh.
47. Tibia and Fibula.
48. Point of hock.
49. Hock.

## DIVISIONS OF THE BODY OF THE BULL—*Continued.*

50. Metatarsal.
51. Pastern.

52. Coronet.
53. Hoofs.

## PLATE II.—THE SKELETON.

### HEAD

1. Left nasal bone.
2. Lower or under jaw.
3. Occipital bone.
4. Frontal protuberance.
5. Horn cores.
6. Frontal-bone.
7. Lachrymal bone.
8. Malar bone.
9. Zygomatic bone.
10. Right nasal bone.
11. Great maxillary bone.
12. Six upper molars.
13. Small maxillary bone.
14. Temporal bone.
15. Orbital cavity.
- In the lower jaw (2) are:
16. The 6 lower molars. (Six on each side = 12.)
17. The 8 incisors.

### TRUNK.

- 18-24. 7 cervical vertebræ, the first is:

18. The atlas, and the second:
19. Dentata.
- 25-37. 13 dorsal vertebræ, with 1'-13'. The ribs, of which: 1'-8' are called true ribs, and 9'-13'. False ribs.
- The first eight extend to
38. The breast-bone or sternum.
- 39-44. The 6 lumbar vertebræ.
45. The sacrum.
- 46-65. 20 coccygeal vertebræ; the number of these varies from 18—20.
- 66-68. Bones of the pelvis.
66. Ilium.
67. Ischium.
68. Os pubis.
69. Hip joint.

### LIMBS.

70. Shoulder blade.
71. Point of shoulder.
72. Upper arm bone (Humerus).
73. Elbow-bone (Ulna).

THE SKELETON—*Continued.*

- |  |   |
|--|---|
| 74. Fore-arm bone or radius.           | 89. Navicular bones.  |
| 75. Elbow-joint.                       | 90. Femur (thigh bone).   |
| 76. Knee joint, consisting of:         | 91. The tibia. (The fibula is rudimentary.)                           |
| 77. Pisiform bone.                     | 92. Patella.  |
| 78. Trapezoid bone.                    | 93. Stifle joint.   |
| 79. Cuneiform bone.                    | 94. Hock; this comprises:   |
| 80. Scaphoid bone.                     | 95. Calcis (heel bone).   |
| 81. Semi-lunar bone.                   | 96. Astragalus  |
| 82. Unciform.                          | 97. Scaphoid.   |
| 83. Metacarpal.                        | 98. First cuneiform bone.   |
| 84. Splint bone.                       | 99. Second and third cunei-   |
| 85. Sesamoid bones.                    | form bones.   |
| 86. Suffragines or long pastern bones. | From the hock downwards, the bones are the same as on the fore limbs. |
| 87. Coronæ 'or short pastern bones.    |   |
| 88. Os pedes or coffin bones.          |   |

PLATE III.—CIRCULATION OF THE BLOOD.

Abbreviations: *H.* Heart, *I.* Trachea, or Windpipe, *S.* Œsophagus (breast portion), *L.* Liver, *M.* Stomachs, *R.V.* Right fore leg, *L.V.* Left fore leg, *R.H.* Right hind leg, *L.H.* Left hind leg, *Mz.* Spleen.

The arteries are traced in red and the veins in blue.

**A. ARTERIES.**

- |  |   |
|--|---|
| 1. The Aorta.  | 11. The interior parotid gland artery, and                      |
| 2. Left coronary of the heart.   | 12. The upper thyroid artery.                                   |
| 3. Anterior aorta.   | 13. The pharyngeal artery.                                      |
| 4. Posterior aorta.  | At the parotid gland, the carotid arteries divide into:         |
| 5. Left innominate artery (section).                                     | 14. The occipital artery (first portion only visible).          |
| 6. Right innominate artery, giving off:                                  | 15. The facial.   |
| 7. The common carotid artery.  | 16. The internal maxillary artery, hidden under parotid gland.  |
| 8. The left carotid artery, and  | 17. The lingual artery.   |
| 9. The trachea.  | 18. Sub-maxillary.  |
| 10. Branches for the windpipe, œsophagus, the neighbouring muscles, also | 19.} Branches of the external maxillary to upper and lower lip. |
|  | 20.}  |

CIRCULATION OF THE BLOOD—*Continued.*

- |   |   |
|---|---|
| From the inner maxillary artery rise and are seen:        | 48. The internal spermatic arteries.        |
| 21. The temporal artery with its branches.                | 49. Circumflex iliac.                       |
| 22. The lower dental artery.                              | 50. The six pairs of lumbar arteries.       |
| 23. The lateral nasal artery.                             | 51. Arteries of the thigh.                  |
| 24. The lower eyelid artery and artery in bridge of nose. | 52. The two pelvic arteries.                |
| From the right innominate artery: (9) come:               | 53. The middle sacral artery.               |
| 25. The anterior intercostal artery (section).            | 54. The posterior mesenteric.               |
| 26. The oblique cervical artery.                          | 55. Branch posterior tibial.                |
| 27. Deep cervical artery.                                 | 56. The artery of the abdominal integument. |
| 28. The vertebral artery.                                 | 57. The deeper femoral artery.              |
| 29. The inner pectoral artery.                            | 58. The external circumflex artery.         |
| 30. The oblique shoulder artery (not visible).            | 59. Posterior tibial artery.                |
| 31. The outer pectoral artery, and                        | 60. Anterior tibial artery.                 |
| 32. The axillary artery (not visible).                    | 61. Posterior tibial artery.                |
| 33. Ulnar.  | 62. Anterior tibial artery.                 |
| 34. Radial.   | 63. Small metatarsal artery.                |
| 35. Small metacarpal artery.                              | 64. Large tarsal artery.                    |
| 36. Large metacarpal artery.                              | 65. Plantar artery.                         |
| 37. Small metacarpal artery.                              | 66. Umbilical artery.                       |
| 38. Anterior digital.                                     | 67. The ilio-lumbar arteries.               |
| 39. Semi-lunar anastomosis.                               | 68. The tail arteries.                      |
| 40. Circumflex artery of coronary cushion.                | 69. The muscular (gluteal) arteries.        |
| 41. The œsophageal artery.                                | 70. The obturator artery.                   |
| 42. The bronchial artery.                                 | 71. Internal pudic artery.                  |
| 43. 10 pairs of intercostal arteries.                     | 72. The sciatic artery.                     |
| 44. The posterior diaphragmatic arteries.                 | 73. The pulmonary artery.                   |
| 45. The cœliac axis.                                      |   |
| 46. The anterior mesenteric artery.                       |   |
| 47. Arteries of the kidneys.                              |   |

**B. VEINS.**

- |  |
|--|
| 74. The anterior vena cava.                      |
| 75.) Jugular veins.                              |
| 76.)   |
| 77. The posterior vena cava.                     |
| 78. The veins of the liver.                      |
| 79. Capillary network system to the portal vein. |
| 80. Portal vein.                                 |



## PLATE IV.—THE MUSCLES.

- |   |   |
|---|---|
| 1. Levator labii superioris alæque nasi.                      | 32. Scapulo ulnaris.                    |
| 2. Zygomaticus.   | 33. Latissimus dorsi.                   |
| 3. Proper elevator of the upper lip.                          | 34. Extensor oblique of abdomen.        |
| 4. Dilator naris lateralis.                                   | 35. Serratus magnus.                    |
| 5. Lachrymalis.   | 36. Pectoralis major.                   |
| 6. Depressor muscle of the upper lip.                         | 37. Extensor of metacarpus.             |
| 7. Masseter.  | 38. Common extensor of the digits.      |
| 8. Sterno maxillaris (maxillary portion).                     | 39. Extensor of external digit.         |
| 9. Its sinew touching on the branch of the lower jaw.         | 40. External flexor of metacarpus.      |
| 10. Orbital cavity part of the circular muscle of the eyelid. | 41. Flexor of foot.                     |
| 11. Eyelid portion of the same.                               | 42. Oblique extensor of metacarpus.     |
| 12. Superior } Adductors of the                               | 43. Tendon.                             |
| 13. Middle } ear.   | 44. Deep flexor of toes.                |
| 14. Inferior }  | 45. }                                   |
| 15. Abductor muscle of the ear.                               | 46. } Tendons.                          |
| 16. Cervical portion } of the muscles common to               | 47. }                                   |
| 17. Mastoid portion } head, neck, and arm.                    | 48. }                                   |
| 18. Arm portion }   | 49. }                                   |
| 19. Clavicular strip.   | 50. Tendon of extensor of foot.         |
| 20. Mastoid portion of the sterno-maxillary muscle.           | 51. Annular ligament of fetlock.        |
| 21. Superficial or broad pectoral muscle.                     | 52. } Superficial gluteus.              |
| 22. Posterior and } of the neck-band shoulder muscle.         | 53. }                                   |
| 23. Anterior portion }  | 54. Tensor vaginæ femoris.              |
| 24. Lower elevator of the shoulder bone.                      | 55. Rectus femoris.                     |
| 25. Trapezius (posterior acromial muscle).                    | 56. Biceps femoris.                     |
| 26. Trapezius (its insertion tendon).                         | 57. Posterior portion of biceps.        |
| 27. Anterior }  | 58. Semitendinosus.                     |
| 28. Posterior }   | 59. Semi membranosus.                   |
| 29. External } brachial extensor.                             | 60. Curvator of tail.                   |
| 30. Thick }   | 61. Long flexor of tibia.               |
| 31. Long }  | 62. Long extensor of foot.              |
|   | 63. Short peroneus.                     |
|   | 64. Long peroneus.                      |
|   | 65. Tendon of short peroneus.           |
|   | 66. Ligaments.                          |
|   | 67. Tendon of peroneus.                 |
|   | 68. Internal gemellus or gastrocnemius. |
|   | 69. Extensor metatarsi.                 |
|   | 70. Tendo Achilles.                     |

## PLATE V.—INTERNAL ORGANS, AND PART OF AN OBLIQUE SECTION OF THE BODY.

- |  |   |
|--|---|
| 1. Cerebrum.   | 33. Palate with its ridges.                         |
| 2. Cerebellum.   | 34. Pharynx.  |
| 3. Pons varolii.   | 35. Cervical and pectoral portion of the œsophagus. |
| 4. Medulla oblongata.  | 36. First stomach.                                  |
| 5. Spinal marrow.  | 37. Its left or upper bag.                          |
| 6. Section of cervical-dorsal-lumbar, sacral and coccygeal vertebræ. | 38. Its right or lower bag.                         |
| 7. Ligamentum nuchæ.   | 39. Pillars of the paunch.                          |
| 8. Turbinated bones.   | 40. Paunch papillæ.                                 |
| 9. Pharynx.  | 41. Opening of the œsophagus.                       |
| 10. Entrance to larynx.  | 42. Fore } division of the                          |
| 11. Windpipe or trachea.   | 43. Middle }  |
| 12. Thyroid gland.   | 44. Back } paunch.                                  |
| 13. Bronchi and their division in lungs.                             | 45. Spleen.   |
| 14. Left lung.   | 46. Opening into the second stomach.                |
| 15. Right lung.  | 47. Second stomach.                                 |
| 16. Wall of pectoral cavity from inside.                             | 48. Its meshes or cells.                            |
| 17. Tendinous portion of the Diaphragm.                              | 49. Third stomach.                                  |
| 18. Muscular part of same.   | 50. Its leaves.                                     |
| 19. Left ventricle.  | 51. Fourth stomach.                                 |
| 20. Right ventricle.   | 52. Its folds of mucous membrane.                   |
| 21. Pulmonary artery.  | 53. Pylorus.  |
| 22. Aorta.   | 54. Duodenum.                                       |
| 23. Right auricle from within.                                       | 55. Mesentary.                                      |
| 24. Right ventricle from within.                                     | 56. Jejunum.  |
| 25. Left auricle from within.  | 57. Ilium.  |
| 26. Left ventricle from within.                                      | 58. Its discharging into cæcum.                     |
| 27. Chordæ, tendinous fibres of the valves.                          | 59. Cæcum.  |
| 28. Semi-lunar valve of the pulmonary artery in the right ventricle. | 60. Colon.  |
| 29. Auriculo-ventricular valve.                                      | 61. Rectum.   |
| 30. Columnæ carneæ.  | 62. Anus.   |
| 31. Cavity of the mouth with the grinders.                           | 63. Liver.  |
| 32. Tongue.  | 64. Left } lobes of the liver.                      |
|  | 65. Right }   |
|  | 66. Spigeliani.                                     |
|  | 67. Polyganal.                                      |
|  | 68. Gall-bladder.                                   |
|  | 69. Biliary ducts of liver.                         |
|  | 70. Biliary duct of gall bladder.                   |

KEY TO THE COLOURED PLATES. (BULL)

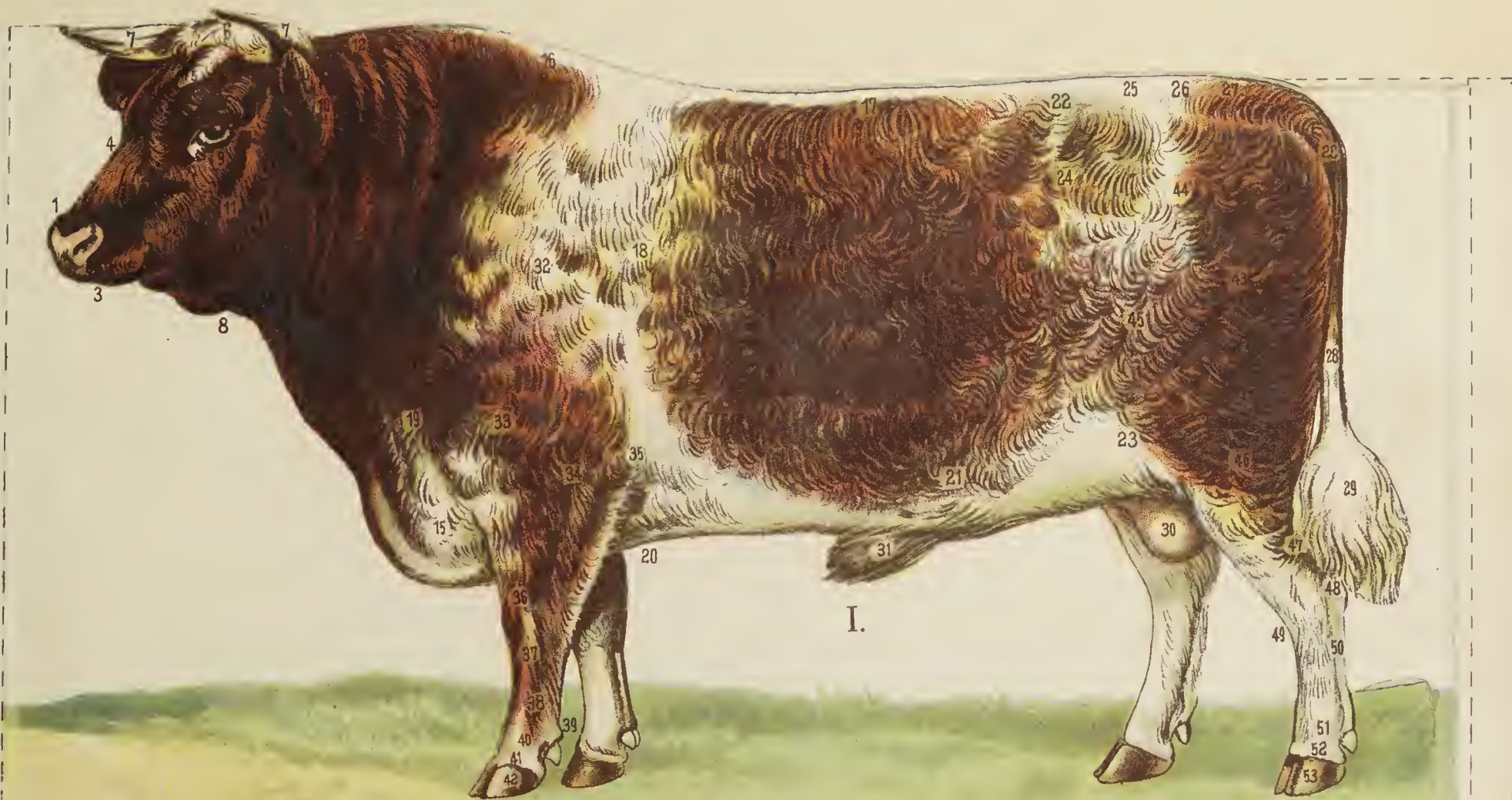
INTERNAL ORGANS, &c. — *Continued.*

- |  |  |
|--|--|
| 71. Common biliary duct.                         | 75. Left kidney.   |
| 72. Entrance of posterior vena cava.             | 76. Section of this.                                     |
| 73. Mouth of portal vein.                        | 77. Right kidney.  |
| 74. Right and left broad ligaments of the liver. | 78. Ureter, going from the kidney basin and leading to : |

INTERNAL ORGANS, &c. — *Continued.*

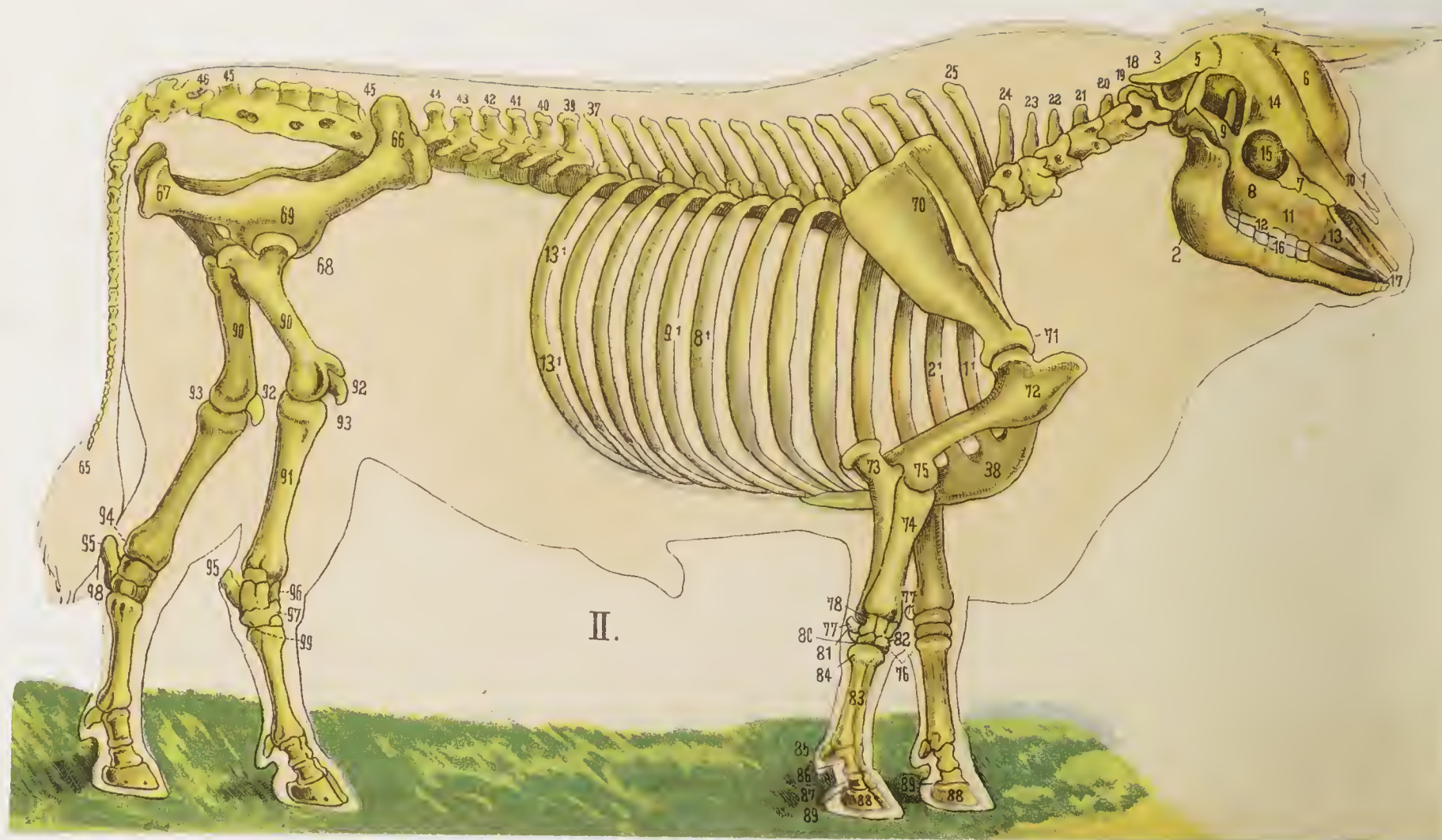
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|--------------------------|---------------------------|
| 79. The bladder.         | 85. Prepuce.              |
| 80. Neck of bladder.     | 86. Spermatic ducts.      |
| 81. Meatus of bladder.   | 87. Scrotum from without. |
| 82. Urethra.             | 88. Testicles.            |
| 83. S-bend of the penis. | 89. Epididymus.           |
| 84. Glans penis.         | 90. Abdominal cavity.     |

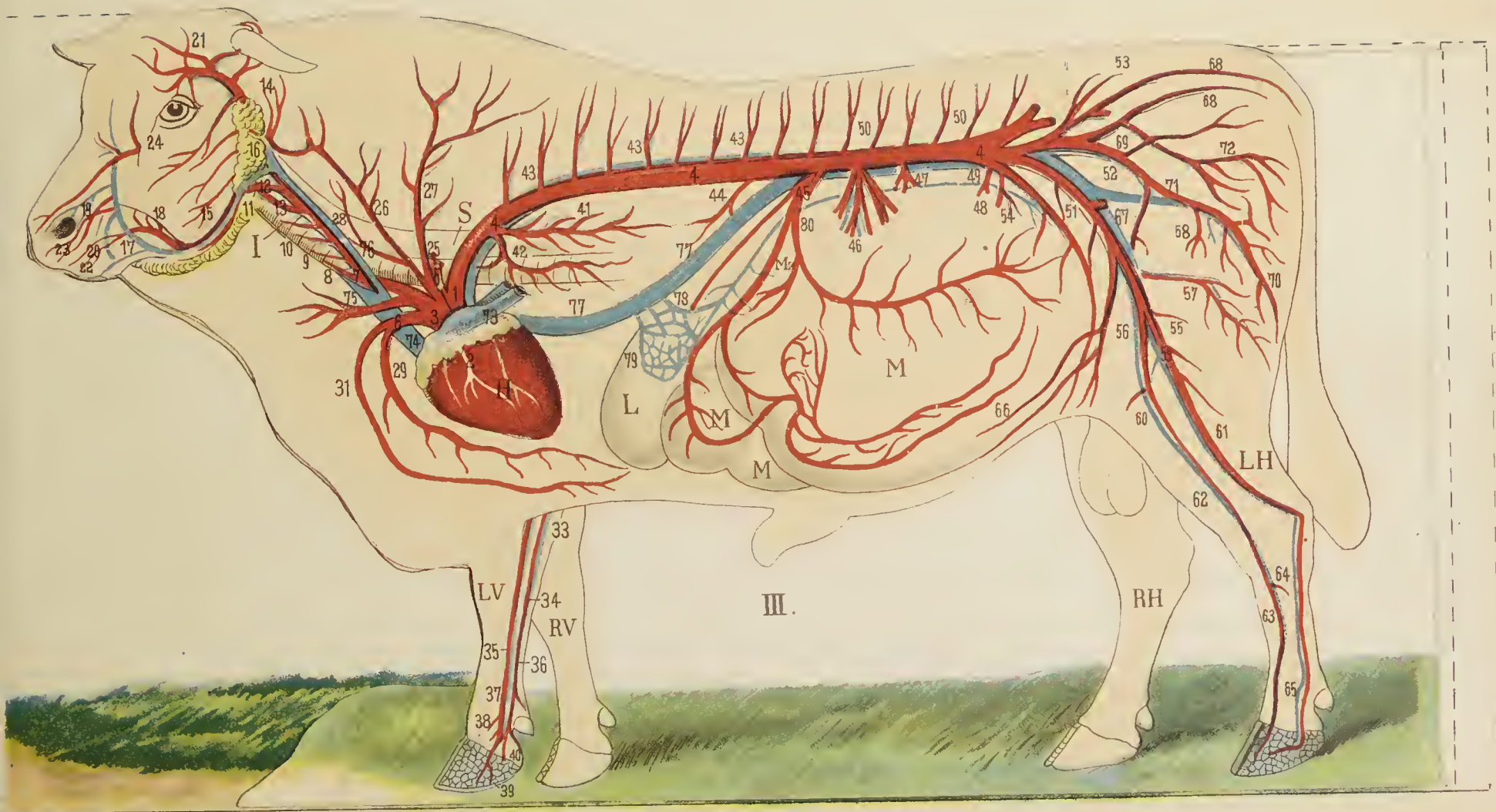




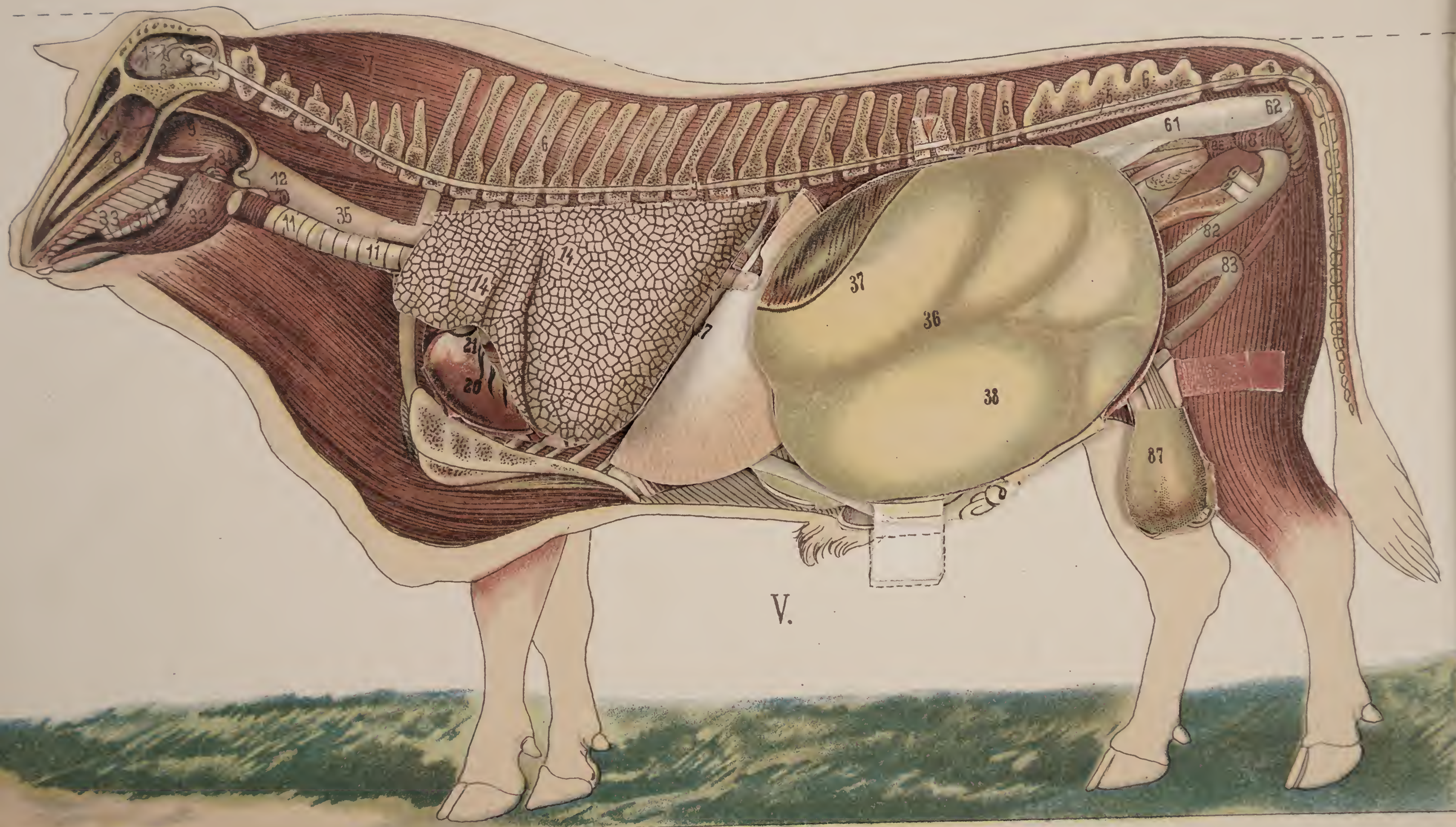
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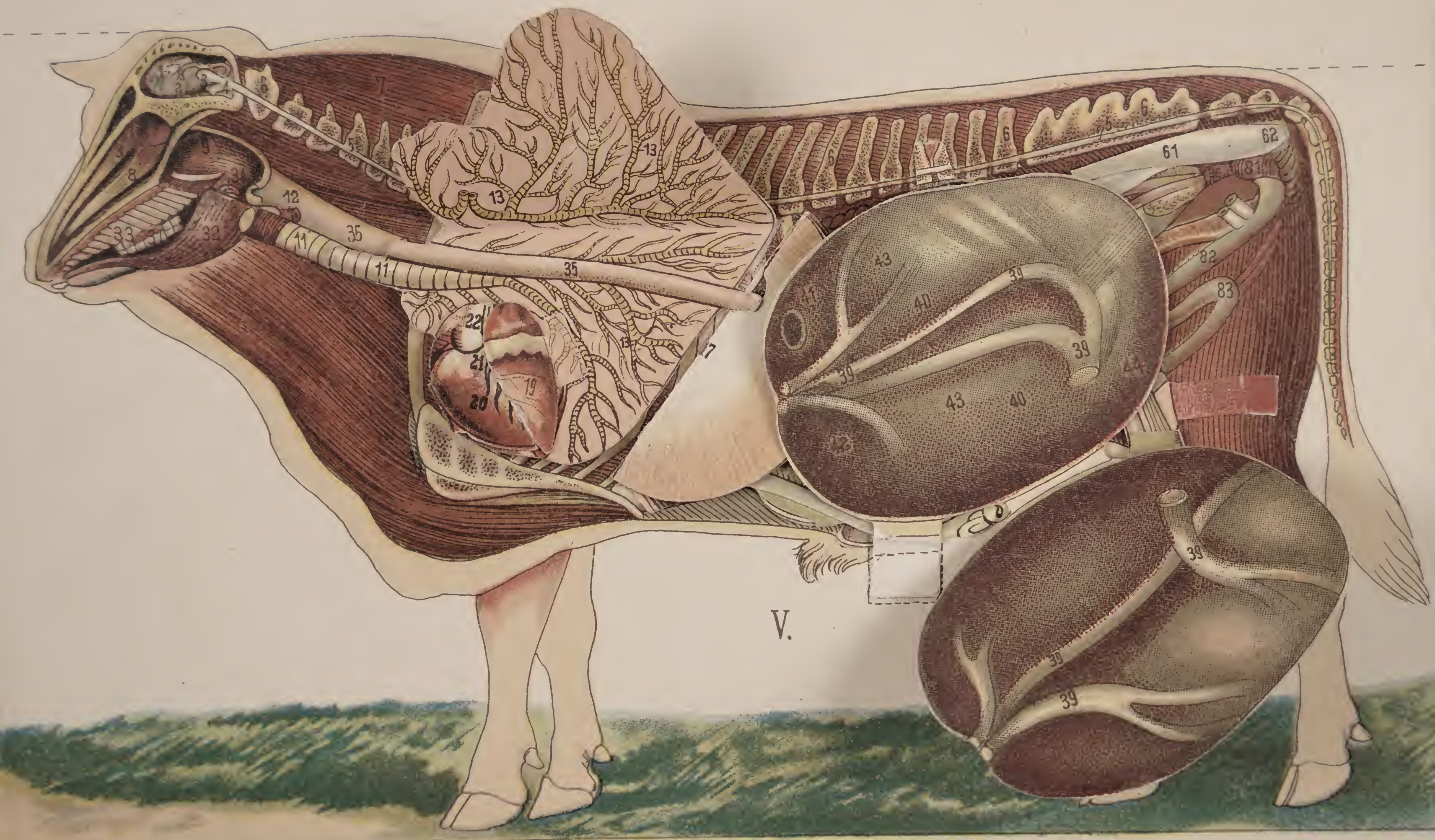




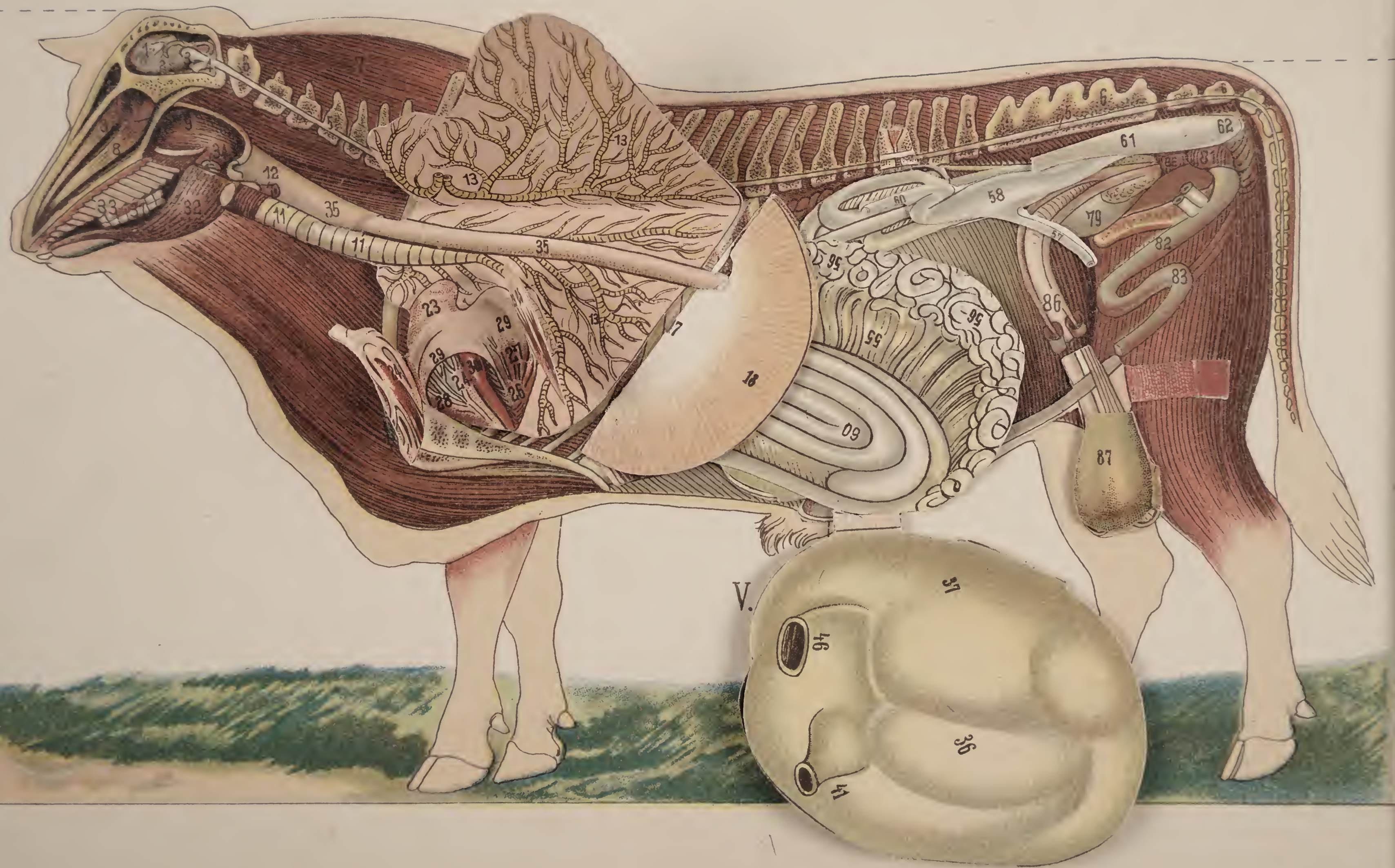




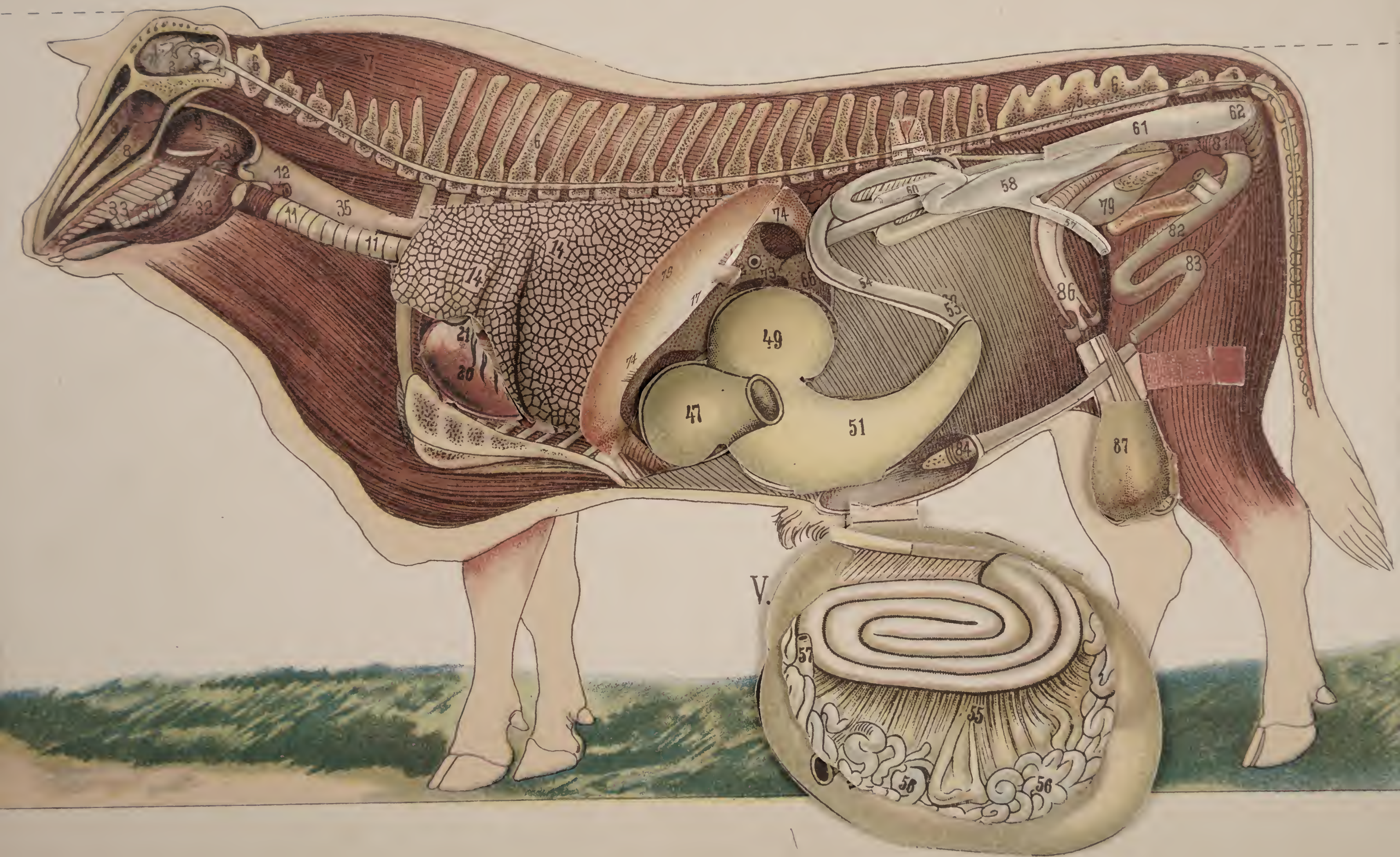




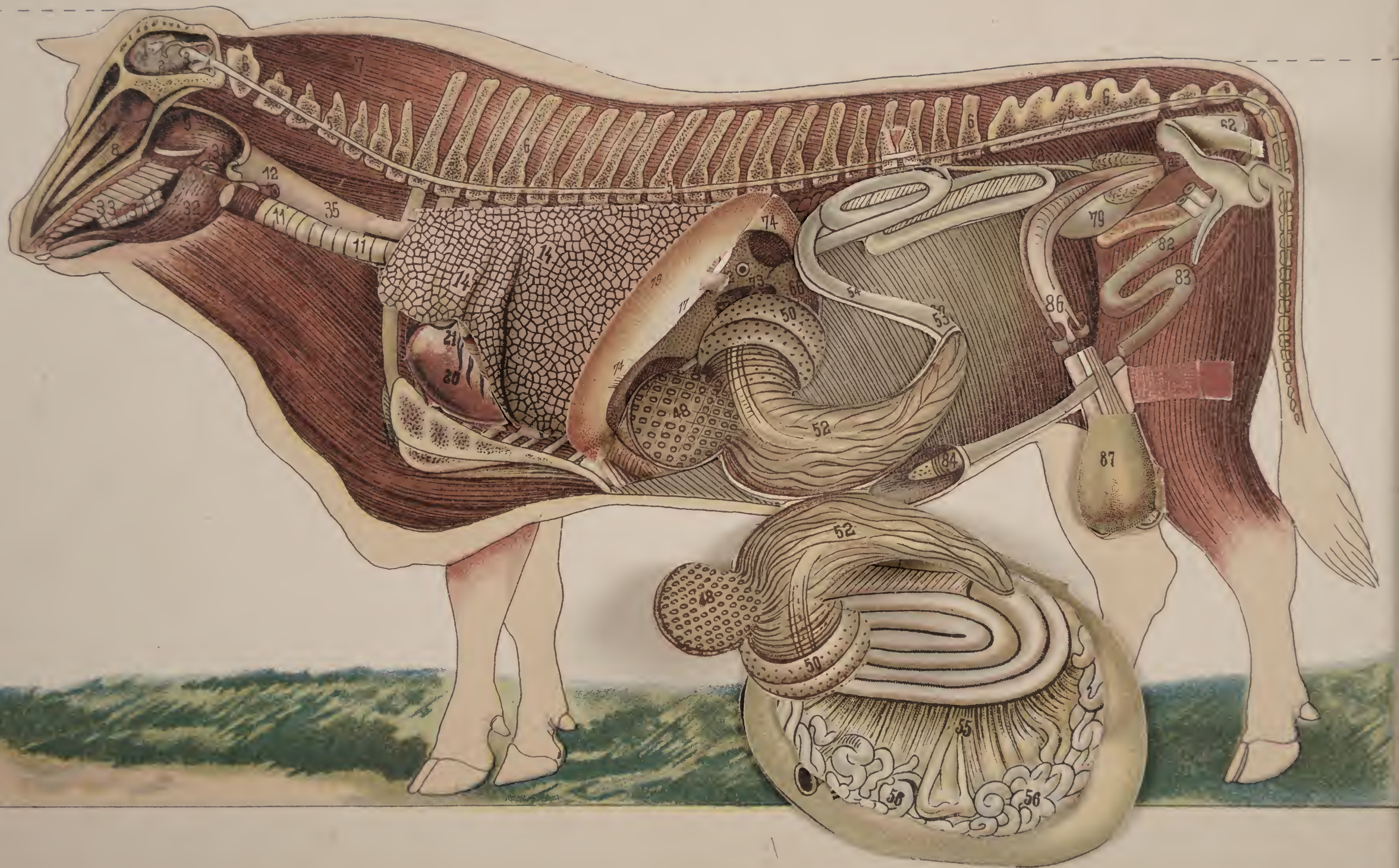




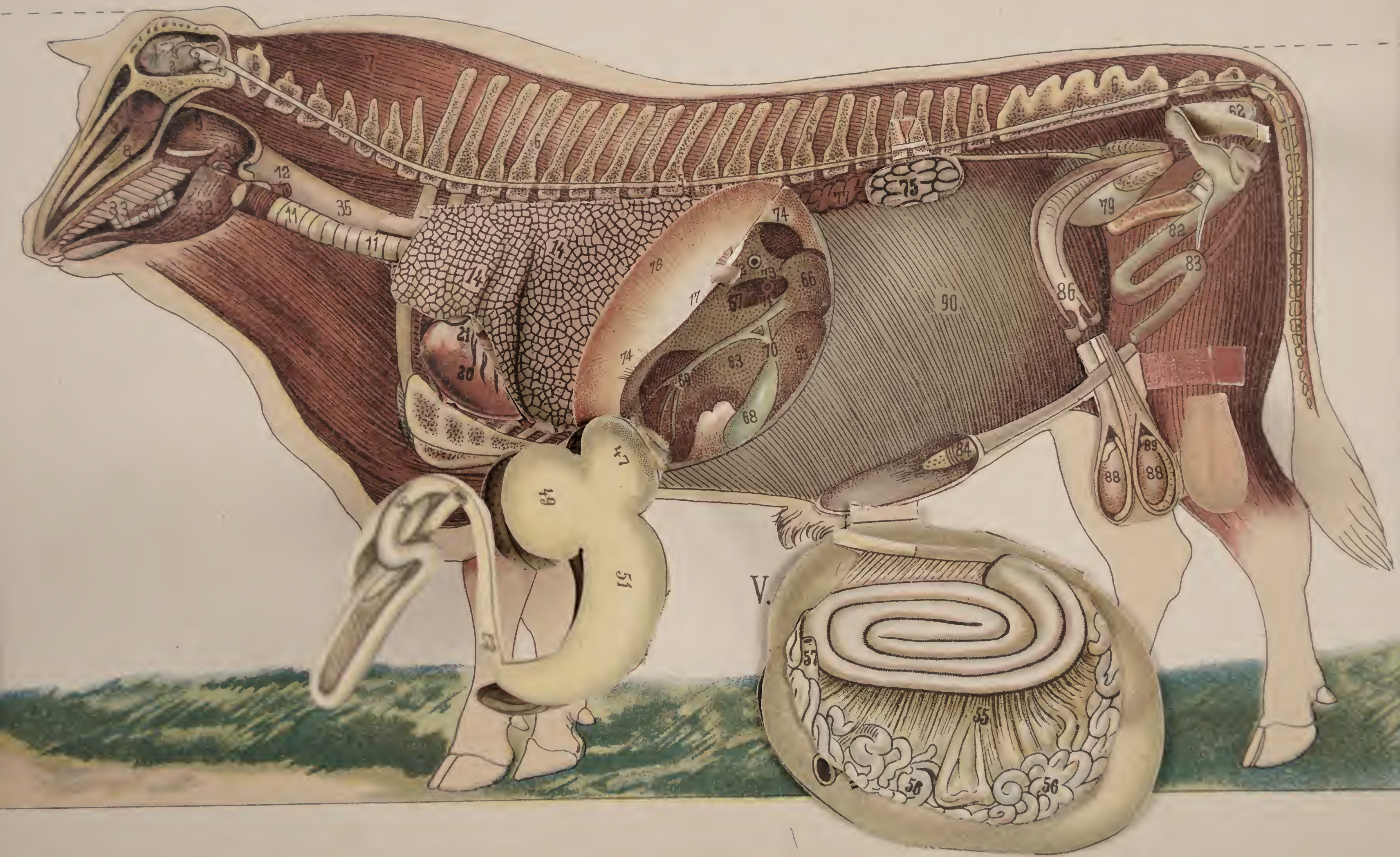




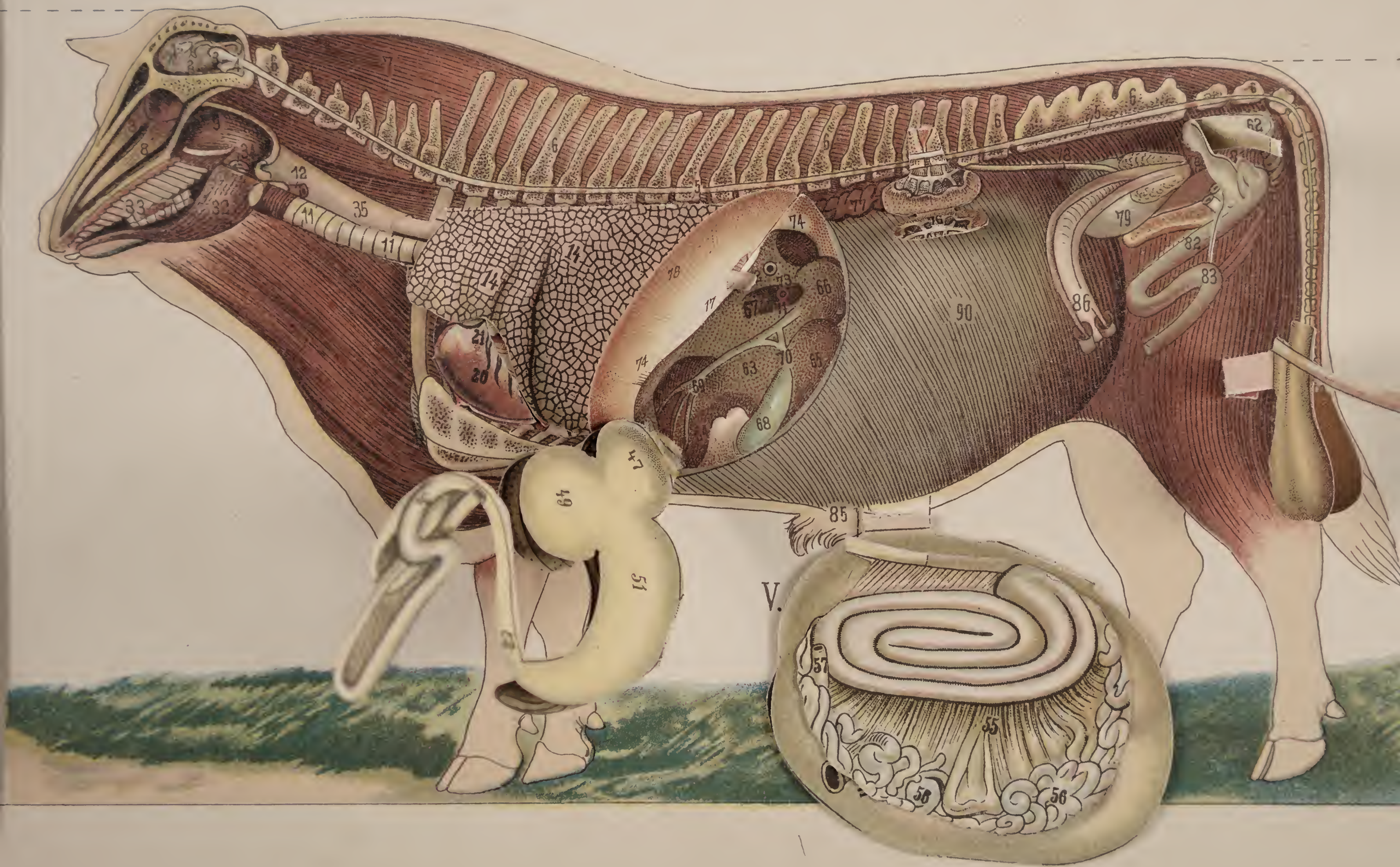
















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